To,

Date: 10-05-2021

ASSISTANT EXECUTIVE ENGINEER
VIDYARANYAPURA SUB DIVISION
BBMP
BANGALORE

Dear Sir,

Sub: M/s. Civil Pro Services for the work of "IMPROVEMENTS TO ROADS AND DRAINS AT BEL LAYOUT 1ST BLOCK 3RD BLOCK 4TH BLOCK AND SURROUNDING AREAS IN WARD NO.09(VIDYARANYAPURA)."

Ref: 1. Work Order No: BBMP/EE/BTP/WO/206/2020-21

2. Job code: 009-20-000072

We are herewith forwarding to Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086. First and Final bill duly verified and certified that the Work is satisfactory and for a Gross Value of Rs.83,20,459.00/- (Rs. Eighty Three Lakhs Twenty Thousand Four Hundred and Fifty One Only).

Thanking you,

Yours faithfully,

For Civil Pro

CIVIL Pro Sig..... Date..... BANGALORE

R RUDRAPRASAD
AUTHORIZED SIGNATORY
CIVIL PRO

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

QC ABSTRACT

NAME OF WORK: Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

SL NO	Item Of Work	Name of Test	Frequency of Test/Quantity	Executed Quantity	Number of Tests Required	Number of Tests Conducted
		Materials				
1	Cement	Fineness by dry sieving	One Test		1	1
		Finess by Air permeablity method	One Test		1	1
		Density	One Test		1	1
		Standard Consistency	One Test		1	1
		Initial Setting time	One Test		1	1
		Final Setting time	One Test		1	1
		Soundness (Le Chatelier's Method)	One Test		1	1
		Compressive Strength	One Test		1	1
2	Coarse aggregate(40 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
3	Coarse aggregate(20 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
		Aggregate crushing Value	One Test		1	1
		Aggregate Impact Value	One Test		1	1
4	Fine aggregate	SIEVE ANALYSIS	One Test		1	1
		Water Absorption	One Test		1	1
		Specific Gravity	One Test		1	1
		Material finer than 75 micron	One Test		1	1
5	Block(400*150*200)	BLOCK DENSITY	One Test		1	1
		WATER ABSORPTION	One Test		1	1
		DIMENSION ANALYSIS	One Test		1	1
		COMPRESSIVE STRENGTH	One Test		1	1
6	Precast (100mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1
7	PCC(M15)	Compressive Strength(7days and 28days)	5 set /51-100 cum	53.84	10	10

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8	WMM	Sieve Analysis	One Test		1	1
		Impact Value	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
9	DBM	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral Aggregate	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
10	BC	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
11	BITUMEN	Ductility	One Test		1	1
		Softening Point	One Test		1	1
		Penetration	One Test		1	1
		Flash Point	One Test		1	1
		Fire Point	One Test		1	1
12	TACK COAT	Rate of spread	One Test		1	1

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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2021-07-03-01** **Date: 08-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP,
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-03-2021
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification . IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5.Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	06-03-2021
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	1.76	-
2	Finess by Air permeablity method (m^2/kg,Min)	292.1	225m^2/kg, Min
3	Density (gm/cc)	3.12	-
4	Standard Consistency (%)	28.0%	Not specified
5	Initial Setting time	155 minutes	Not less than 30 minutes
6	Final Setting time	260 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	2mm	Not more than 10 mm

* The results obtained are satisfactory as per standard requirements.

Note:

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All information furnished by Customer/Representative

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Samples will be disposed after 30 days from the date of issue of test certificate

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FOR CIVIL Pro.

R RUDRAPRASAD
Authorized Signatory
Technical Manager

****End of Report****

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2021-07-03-01** **Date: 03-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-03-2021
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification . IS 4031 Part 4, Determination of Consistency of Standard Cement Paste. Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	06-03-2021
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Compressive Strength			
Sl.No.	**Physical properties**	**Results**	**Requirement as per IS 12269: 2013**
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	58.5N/mm^2	Not less than 53 N/mm^2

* The results obtained are satisfactory as per standard requirements.

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Authorized Signatory
Technical Manager

ASSISTANT EXECUTIVE ENGINEER Vidyaranyapura Sub-Division Bruhath Bengaluru Mahanagara Palike

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Format No: CP/TF/01

TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2021-07-03-01** **Date: 08-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	05-03-2021
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	05-03-2021

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	245	245	1.6	98.4	90-100
3	20 mm	7875	8120	54.1	45.9	30-70
4	10 mm	3899	12019	80.1	19.9	10-35
5	4.75 mm	2588	14607	97.4	2.6	0-5
6	Pan	393	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.4	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.9	
3	Specific Gravity	2.64	–
4	Bulk Density(Loose) (Kg/l)	1.38	–
5	Bulk Density(Compacted) (Kg/l)	1.45	–
6	Water Absorption(%)	0.22	–

* The results obtained are satisfactory as per standard requirements.

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R RUDRAPRASAD
Authorized Signatory
Technical Manager

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Vidyaranyapura Sub-Division
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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2021-07-03-01** **Date: 08-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-03-2021
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	05-03-2021

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	298	298	6.0	94.0	90-100
3	10 mm	2645	2943	58.9	41.1	25-55
4	4.75 mm	1811	4754	95.1	4.9	0-10
5	Pan	246	5000	100	0	–

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	8.9	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.4	
3	Specific Gravity	2.62	_
4	Bulk Density(Loose) (Kg/l)	1.42	_
5	Bulk Density(Compacted) (Kg/l)	1.48	_
6	Water Absorption(%)	0.35	_
7	Aggregate crushing Value(%)	24.8	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	25.1	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	8.9	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.4	
3	Specific Gravity	2.62	_
4	Bulk Density(Loose) (Kg/l)	1.42	_
5	Bulk Density(Compacted) (Kg/l)	1.48	_
6	Water Absorption(%)	0.35	_
7	Aggregate crushing Value(%)	24.8	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	25.1	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Technical Manager

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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

End of Report

Format No: CP/TF/01

TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 05-03-2021

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 05-03-2021

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	27	27	2.7	97.3	90-100	90-100	90-100	95-100
3	2.36 mm	55	82	8.2	91.8	60-95	75-100	85-100	95-100
4	1.18 mm	239	321	32.1	67.9	30-70	55-90	75-100	90-100
5	600 micron	205	526	52.6	47.4	15-34	35-59	60-79	80-100
6	300 micron	203	729	72.9	27.1	5-20	8-30	12-40	15-50
7	150 micron	191	920	92.0	8.0	0-10	0-10	0-10	0-15
8	Pan	80	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.5	–
2	Specific Gravity	2.59	–
3	Material finer than 75 micron(%)	6.9	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

* The results obtained are satisfactory as per standard requirements.

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Authorized Signatory
Technical Manager

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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

Format No: CP/TF/01

TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2021-07-03-01** **Date: 08-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	06-03-2021
Sample Type/Size	:	Solid concrete blocks size (400X100X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	06-03-2021

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185(Part 1) :2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	400	150	201	12060	23.866	1978.9	1856.6	Not less than 1800Kg/m^3
2	404	152	203	12466	22.423	1798.7		
3	403	152	199	12190	21.848	1792.3		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185(Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	33.91	32.25	4.89	4.25	Shall not be more than 10% by mass
2	33.57	32.14	4.28		
3	33.44	32.24	3.59		

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

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Lab ID : **CP-2021-07-03-01** **Date: 08-03-2021**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	402	150	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	400	149	202	
3	404	150	199	
4	400	151	203	
5	402	149	200	
6	402	153	202	
7	400	152	200	
8	400	152	201	
9	403	152	203	
10	401	150	202	
11	400	149	200	
12	402	151	201	
13	401	149	200	
14	402	150	199	
15	403	153	202	
16	399	149	201	
17	403	152	201	
18	402	151	200	
19	402	150	200	
20	402	150	199	
Average of 20	**402**	**151**	**201**	

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Lab ID : CP-2021-07-03-01

Date: 08-03-2021

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	402	150	60264	252.6	4.2	4.2
2	400	149	59845	254.9	4.3	
3	404	150	60496	252.8	4.2	
4	400	151	60278	253.5	4.2	
5	402	149	60164	259.9	4.3	
6	402	153	61364	253.9	4.1	
7	400	152	60955	252.6	4.1	
8	400	152	60763	257.7	4.2	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	**Minimum average**	**Minimum Individual units.**
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

R RUDRAPRASAD
Authorized Signatory
Technical Manager

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Format No: CP/TF/01

TEST REPORT OF PRECAST COVER SLAB

Lab ID	:	**CP-2021-07-03-01** **Date: 12-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu. H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	08-03-2021
Sample Type /Size	:	Precast Cover Slab (100mm)
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete
Date of test	:	08/03/2021

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	(kg)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
1	Cover Slab-1	75.51	100.48	1.116	4477	80.9	18.1	16.8	21.0
2	Cover Slab-2	75.49	100.52	1.122	4475	82.3	18.4	17.1	21.4
3	Cover Slab-3	75.50	100.51	1.118	4476	81.5	18.2	16.9	21.2

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Authorized Signatory
Technical Manager

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub Division
Bruhath Bengaluru Mahanagara Palike

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID	:	**CP-2021-07-03-01** **Date: 22/03/2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	17-03-2021
Customer ID	:	Flagging Course Concrete
Sample Type /Size	:	150X150X150 mm
Sample grade/Age	:	M15 / 7 Days Compressive Strength
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5
Date of test	:	22/03/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	22/03/2021	150.81 X 149.69 X 150.72	22575	**8.413**	288.7	12.8	12.6
2	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.46 X 151.35 X 149.53	22621	**8.188**	274.6	12.1	
3	Flagging Course Concrete	M15	15/03/2021	22/03/2021	151.30 X 151.08 X 151.87	22859	**8.563**	293.9	12.9	

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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

****End of Report****

Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID	:	**CP-2021-07-03-01** **Date: 12/04/2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	17-03-2021
Customer ID	:	Flagging Course Concrete
Sample Type /Size	:	150X150X150 mm
Sample grade/Age	:	M15 / 28 Days Compressive Strength
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5
Date of test	:	12/04/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	12/04/2021	149.98 X 151.93 X 149.22	22786	**8.927**	394.2	17.3	17.4
2	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.88 X 150.82 X 150.94	22757	**8.875**	391.7	17.2	
3	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.56 X 150.91 X 149.88	22721	**8.604**	403.7	17.8	

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R RUDRAPRASAD
Authorized Signatory
Technical Manager

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | ENVIRONMENTAL
WATER TESTING | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 22/03/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 22/03/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.58 X 150.90 X 149.89	22570	**8.413**	281.3	12.5	12.6
2	Flagging Course Concrete	M15	15/03/2021	22/03/2021	150.65 X 150.74 X 150.06	22710	**8.188**	292.5	12.9	
3	Flagging Course Concrete	M15	15/03/2021	22/03/2021	150.90 X 151.53 X 151.73	22866	**8.563**	282.0	12.3	

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Vidyaranyapura Sub-Division
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Technical Manager

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 12/04/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 12/04/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.06 X 150.06 X 151.79	22519	**8.927**	389.6	17.3	17.4
2	Flagging Course Concrete	M15	15/03/2021	12/04/2021	149.17 X 149.98 X 150.57	22372	**8.875**	384.0	17.2	
3	Flagging Course Concrete	M15	15/03/2021	12/04/2021	151.70 X 150.80 X 149.27	22877	**8.604**	406.9	17.8	

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Authorized Signatory
Technical Manager

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 22/03/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 22/03/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.24 X 151.64 X 151.02	22632	**8.413**	280.7	12.4	12.4
2	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.23 X 151.45 X 150.66	22601	**8.188**	281.0	12.4	
3	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.76 X 151.36 X 150.51	22667	**8.563**	280.9	12.4	

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R. Rudraprasad

R RUDRAPRASAD
Authorized Signatory
Technical Manager

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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 12/04/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 12/04/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	12/04/2021	151.78 X 150.44 X 151.44	22833	8.927	407.3	17.8	17.7
2	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.70 X 151.91 X 151.68	22892	8.875	400.9	17.5	
3	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.90 X 149.42 X 150.52	22547	8.604	402.6	17.9	

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Technical Manager

Page 1/1
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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 22/03/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 22/03/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	22/03/2021	151.82 X 149.93 X 149.04	22762	**8.413**	276.5	12.1	12.7
2	Flagging Course Concrete	M15	15/03/2021	22/03/2021	150.52 X 150.48 X 149.88	22649	**8.188**	292.4	12.9	
3	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.02 X 149.18 X 151.08	22230	**8.563**	287.5	12.9	

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Authorized Signatory
Technical Manager

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 12/04/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 12/04/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	12/04/2021	150.27 X 150.98 X 149.42	22687	**8.927**	407.8	18.0	17.6
2	Flagging Course Concrete	M15	15/03/2021	12/04/2021	151.35 X 149.45 X 151.67	22620	**8.875**	387.3	17.1	
3	Flagging Course Concrete	M15	15/03/2021	12/04/2021	149.11 X 150.04 X 149.50	22373	**8.604**	396.2	17.7	

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Authorized Signatory
Technical Manager

****End of Report****

Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 22/03/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 22/03/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	22/03/2021	151.45 X 150.33 X 150.20	22768	**8.413**	282.1	12.4	12.3
2	Flagging Course Concrete	M15	15/03/2021	22/03/2021	150.54 X 150.28 X 151.84	22624	**8.188**	278.3	12.3	
3	Flagging Course Concrete	M15	15/03/2021	22/03/2021	149.41 X 149.58 X 151.27	22349	**8.563**	269.5	12.1	

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Vidyaranyapura Sub-Division
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Technical Manager

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2021-07-03-01** **Date: 12/04/2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer's Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-03-2021

Customer ID : Flagging Course Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 12/04/2021

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Flagging Course Concrete	M15	15/03/2021	12/04/2021	151.48 X 151.21 X 149.49	22905	**8.927**	398.7	17.4	17.4
2	Flagging Course Concrete	M15	15/03/2021	12/04/2021	149.83 X 150.97 X 151.61	22619	**8.875**	388.1	17.2	
3	Flagging Course Concrete	M15	15/03/2021	12/04/2021	149.17 X 150.40 X 150.83	22435	**8.604**	395.6	17.6	

* The results obtained are satisfactory as per standard requirements.

Note:

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Technical Manager

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TEST RESULTS OF GRADATION FOR WMM

Lab ID : **CP-RW-2021-07-03-01** **Date: 20-03-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 18-03-2021

Type of Mix : WMM (Wet Mix Macadam)

Date of Test : 18-03-2021

Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2021-07-03-01** **Date: 20-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-03-2021
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of Test	:	18-03-2021

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

* The results obtained are satisfactory as per standard requirements.

Note:-

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2021-07-03-01** **Date: 20-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-03-2021
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of Test	:	18-03-2021

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2021-07-03-01** **Date: 29-03-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer's Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	27-03-2021
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of Test	:	27-03-2021

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**64**	60 to 70
2	Softening Point, °C	**51.2**	Min. 40°C
3	Ductility, cm	**98**	Min. 75cm
4	Flash point, °C	**245**	Min. 220°C
	Fire point, °C	**272**	

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2021-07-03-01**	**Date: 05-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)	
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086	
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	02-04-2021	
Type of Mix	:	DBM-Plant (Dense Bituminous Macadam)	
Date of Test	:	02-04-2021	
Weight of Sample	:	5000 Grams	

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10 (grading -2)
37.5	0	0	0	100	100
26.5	250	250	5.00	95.00	90-100
19	350	600	12.00	88.00	71-95
13.2	450	1050	21.00	79.00	56-80
4.75	1750	2800	56.00	44.00	38-54
2.36	400	3200	64.00	36.00	28-42
0.3	1350	4550	91.00	9.00	7-21
0.075	250	4800	96.00	4.00	2-8
PAN	200	5000	0.00	0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE BITUMINOUS MACADAM

Lab ID	:	**CP-RW-2021-07-03-01**	**Date: 05-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)	
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086	
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	02-04-2021	
Type of Mix	:	DBM (Dense Bituminous Macadam)	
Date of Test	:	02-04-2021	

Table 500-6 : Physical Requirements fo Coarse Aggregate for Dense Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	15.0	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	13.0		
Strength	Aggregate Impact Value	22.0	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.58	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.38	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2021-07-03-01** **Date: 05-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	02-04-2021
Type of Mix	:	DBM (Dense Bituminous Mecadam)
Date of Test	:	02-04-2021

The results of the tests conducted on the Dense Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11	9	9KN(Min)
2	Marshal flow at 60°C, mm	3	2	2-4
3	Percent air Voids	3	4	3-5
4	Percent Voids in mineral Aggregate(VMA %)	15	13	13-15
5	Percent Voids filled with Bitumen(VFB %)	65	70	65-75
6	Density, g/cc	2.42	2.40	–

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : **CP-RW-2021-07-03-01** **Date: 05-04-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 02-04-2021

Type of Mix : DBM(Dense Bitumnous Macadam)

Date of Test : 02-04-2021

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.3	Minimum Retained Coating 95%
2	99.0	1.0		
3	98.0	2.0		

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR DBM (IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2021-07-03-01**	**Date: 14-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)	
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086	
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21	
Source of Sample	:	Sample supplied by Agency	
Date of Receipt	:	12-04-2021	
Type of Mix	:	DBM (Dense Bituminous Macadam)	
Date of Test	:	12-04-2021	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	475	476
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.8	4.8
4	Average percentage	%	4.8	

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Lab ID : CP-RW-2021-07-03-01 **Date: 14-04-2021**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 475

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	14.4	14.4	3.03	97.0	90-100
19	24	38.4	8.08	91.9	71-95
13.2	120	158.4	33.35	66.7	56-80
4.75	96	254.4	53.56	46.4	38-54
2.36	80	334.4	70.40	29.6	28-42
0.3	62.4	396.8	83.54	16.5	7-21
0.075	52.8	449.6	94.65	5.3	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 476

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	0	0	0.00	100.0	90-100
19	48	48	10.08	89.9	71-95
13.2	65	113	23.74	76.3	56-80
4.75	120	233	48.95	51.1	38-54
2.36	74	307	64.50	35.5	28-42
0.3	80	387	81.30	18.7	7-21
0.075	70	457	96.01	4.0	2-8

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID : **CP-RW-2021-07-03-01** **Date: 09-04-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 07-04-2021

Type of Mix : BC-Plant (Bituminous Concrete)

Date of Test : 07-04-2021

Oven Dry Weight : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	895	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	503	3268	65.4	34.6	26-38
0.3	528	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2021-07-03-01** **Date: 10-04-2021**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)
Agency	:	Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086
Customer Reference	:	BBMP/EE/BTP/WO/206/2020-21
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	07-04-2021
Type of Mix	:	BC(Bitumenous Concrete)
Date of Test	:	07-04-2021

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

Note:-
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R RUDRAPRASAD
Authorized Signatory
Technical Manager

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bangaluru Mahanagara Palike

****End of Report****

TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2021-07-03-01** **Date: 15-04-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Date of Receipt : 14-04-2021

Type of Mix : BC (Bituminous Concrete)

Date of Test : 14-04-2021

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	469	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.20	6.00
4	Average percentage	%	6.1	

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Technical Manager

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

Lab ID : **CP-RW-2021-07-03-01** **Date: 15-04-2021**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.1	85.9	70-88
4.75	112	178	38.0	62.0	53-71
2.36	88	266	56.7	43.3	42-58
1.18	29	295	62.9	37.1	34-48
0.6	11	306	65.2	34.8	26-38
0.3	46	352	75.1	24.9	18-28
0.15	45	397	84.6	15.4	12-20
0.075	55	452	96.4	3.6	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	40	437	93.0	7.0	4-10

* The results obtained are satisfactory as per standard requirements.

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End of Report

TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : CP-RW-2021-07-03-01 **Date: 05-05-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Date of Receipt : 04-05-2021

Type of Mix : BC (Bituminous Concrete)

Date of Test : 04-05-2021

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	469	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.20	6.00
4	Average percentage	%	6.1	

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Bruhath Bengaluru Mahanagara Palike

Lab ID : **CP-RW-2021-07-03-01** **Date: 05-05-2021**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.1	85.9	70-88
4.75	112	178	38.0	62.0	53-71
2.36	88	266	56.7	43.3	42-58
1.18	29	295	62.9	37.1	34-48
0.6	11	306	65.2	34.8	26-38
0.3	46	352	75.1	24.9	18-28
0.15	45	397	84.6	15.4	12-20
0.075	55	452	96.4	3.6	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	5	5	1.1	98.9	90-100
9.5	58	63	13.4	86.6	70-88
4.75	120	183	38.9	61.1	53-71
2.36	70	253	53.8	46.2	42-58
1.18	20	273	58.1	41.9	34-48
0.6	40	313	66.6	33.4	26-38
0.3	56	369	78.5	21.5	18-28
0.15	35	404	86.0	14.0	12-20
0.075	30	434	92.3	7.7	4-10

* The results obtained are satisfactory as per standard requirements.

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : **CP-RW-2021-07-03-01** **Date: 10-04-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 07-04-2021

Type of Mix : BC (Bituminous Concrete)

Date of Test : 07-04-2021

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

* The results obtained are satisfactory as per standard requirements.

Note:-

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-2021-07-03-01** **Date: 10-04-2021**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at BEL Layout 1st Block 3rd Block 4th Block and Surrounding Areas in Ward No.09(Vidyaranyapura)

Agency : Sri.P Vijaya Babu, H No: 1504, 4th Main, 2nd Stage, West of Cord Road, Bangalore-560086

Customer Reference : BBMP/EE/BTP/WO/206/2020-21

Source of Sample : Hot Mix Plant, Bangalore

Sample Condition : Satisfactory

Date of Receipt : 07-04-2021

Type of Mix : BC (Bituminous Concrete)

Date of Test : 07-04-2021

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.13	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	–

* The results obtained are satisfactory as per standard requirements.

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